

The Relationship Between Participation in Different Music Programs and Academic Achievement

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ABSTRACT

The current study investigates the relationship between participation in different music programs and academic achievement. This topic was investigated because although a strong correlation between music participation and academic achievement has been established, this could vary among different music programs. This is because different personality traits tend to be prevalent amongst different courses (MacLellan, 2011) and this variation in personality has been proven by multiple researchers to influence academic achievement (e.g., Nechita et al., 2015; Mammadov, 2021). Based on the pre-existing research about the relationship between academic achievement and music participation, and the effects of personality on student success, I hypothesized choir students would have lower achievement. This is because choir students displayed higher levels of extraversion, which was proven to hinder achievement. A two-part, dual-methods study was conducted, consisting of an ex-post facto research design utilizing a shortened achievement test, and a content analysis of student transcript summaries. A shortened version of an SAT practice test was completed by 19 subjects, and 14 of the 19 subjects turned in a copy of their student transcript summaries. This study found no statistically significant effect on academic achievement. This can benefit students, parents, and counselors. Schools should endorse various music programs since providing students with options allows them to explore their interests and benefit their achievement. The findings can also be beneficial to scientists because this study provides insight into how music influences the brain since the courses must have had a common factor that influenced brain activity.

Introduction

Since the early 1900s, it has been well established that student participation in music courses has had a significant positive effect on academic achievement (AcaAchieve) (Morrison, 1994). In fact, according to the American Music Conference, “95% of Americans believe that music is a key component in a child’s well-rounded education” (Southgate & Roscigno, 2009, p. 5). Some of the many benefits provided by music courses include increased opportunities for collaboration amongst students, enhanced reading comprehension, and stronger mathematical ability (Eisner, 1998). The correlation between music courses and AcaAchieve does not lack research and investigation; researchers consistently discover new benefits of music participation and observe how they help students to succeed.

Music education exists in several forms, focusing on the education of distinct musical techniques such as instrumental and vocal performance. The most prominent music courses provided by public school systems include band, orchestra, and choir (MacLellan, 2011). According to the Hillsborough County Public Schools 6-12 Music Curriculum Guide, band courses focus on the development of wind and percussion literature, orchestra courses focus on the attainment of ensemble skills and orchestral literature, and choir courses focus on the strengthening of vocal ensemble performance skills (2021).

Unique personality traits have been associated with students in different music courses (MacLellan, 2011). For instance, extraversion tends to be significantly more prevalent amongst choir programs over band and orchestra programs (MacLellan, 2011). These differences have proven to cause notable differences in AcaAchieve because introverts often obtain higher grades than extraverts, due to their more frequent study habits. Since personality traits

can cause differences in AcaAchieve, differences may exist between various music courses and their benefits (Cabana, 2013).

The goal of this study is to measure the AcaAchieve of students in different music programs to determine whether a correlation exists between various music courses and AcaAchieve. It is imperative to determine whether specific music programs affect student success differently to establish whether various music styles interact uniquely with the brain by influencing focus or mood, and to gain a richer understanding of the relationship between music and AcaAchieve.

Literature Review

Search Strategies

Sources were found by searching various databases with the limit of peer-reviewed, apart from reputable organizations, to ensure credibility. Keywords used while researching were: Academic Achievement, Music Education, Music Participation, and Student Success.

Benefits of General Music Participation

Collaboration in Music Courses

Before discussing the possible variations in AcaAchieve amongst different music courses, it is necessary to understand the benefits of general music participation. To begin, experiences in music courses have benefited students' AcaAchieve. For example, in a study analyzing the correlation between music courses and student empathy, Lynda Laird (2015), a doctoral student in music education, described how musical interaction allows students to practice cooperation. Students practice cooperation in music classrooms by sharing instruments, providing suggestions to their stand partners, and offering positive contributions to class discussions (Laird, 2015). These experiences have fostered a collaborative environment amongst students in music programs. Furthermore, the students' perspectives suggest this collaboration is necessary to succeed in the classroom. In a study investigating the factors to succeed academically, students described that a "sense of shared goals to achieve" and a "comprehensive support system" were necessary for optimal performance in accelerated courses (Shaunessy-Dedrick et al., 2015, p. 128). This suggests that cooperation amongst students in music courses contributes to success in accelerated high school courses.

To further investigate how these experiences affect students, Márta Janurik and Kriaztián Józsa (2022) analyzed academic abilities, musical aptitude, and intelligence of students engaged in after-school music programs. They found that musical abilities were associated with cognitive benefits that proved to be key predictors of GPA (Janurik, 2022). This is because the development of music abilities is a complex activity that requires persistence, decoding of patterns, motor coordination, and familiarization with musical structures (Janurik, 2022). The nature of learning a new skill in a collaborative environment allows students to have increased cognitive benefits such as persistence and motivation that allow for increased AcaAchieve.

Music Participation and Core Academic Skills

Additionally, several researchers have concluded that music directly correlates with stronger core academic skills, such as math achievement. For instance, a meta-analysis of 20 correlational studies between music participation and math ability found a modest positive association between voluntary music participation and math achievement (Vaughn, 2000). Similarly, a study reviewing the correlation between music courses and AcaAchieve found that stu-

dents demonstrated 6.1 percent higher math scores (Morrison, 1994). While music courses have been proven to correlate with increased math ability, researchers disagree which abilities correlate the most with music participation. For example, Kathleen A. Corrigan and Lauren J. Trainor of McMaster University (2011) asserted that music training had an extraordinarily strong correlation with reading comprehension. They also explain that music lessons help children to become proficient learners who have exceptional concentration and motivational skills, helping their reading comprehension (Corrigan, 2011). Music courses have shown a correlation with stronger core academic skills such as math ability and reading comprehension.

However, it has been determined that music participation has shown a correlation with improved performance in almost all subject areas. After investigating the correlation between music participation and student performance, a study analyzing mean student grades confirmed that students who participated in music courses demonstrated higher grades in all subjects except for history and some language courses (Cabanac, 2015). Increases in student performance also enhance students' ability to receive academic honor and student recognition (Morrison, 1994). This is because higher grades influence a student's ability to receive certain awards such as "Principal's Honor Roll," an award given to students who achieve all As that quarter. Music courses increase AcaAchieve because they improve student performance.

Increased Performance on Standardized Tests

Since music participation has contributed to improved student performance, music course participation has shown a correlation with increased scores on standardized assessments such as the Scholastic Aptitude Test [SAT]. According to the College Board's Total Group Profile Report (2016), the SAT "assesses student reasoning based on knowledge and skills developed by the students in their course work" (p. 2). The relationship between music courses and SAT scores has been observed since 1987, from student responses to the Student Descriptive Questionnaire offered by the College Board (Vaughn & Winner, 2000). In fact, in 1999 a testimony by the head of a cable TV station along with Wynton Marsalis presented to the US House of Representatives Education Caucus stated: "Music actually makes our kids smarter... The College Board last year documented a 100-point gap in SAT scores between students who had music instruction during their early elementary school years and students who did not" (Vaughn & Winner, 2000, p. 77). Additionally, according to the College Board, students who participated in more than four years of music on average scored 65 points higher on critical reading, 60 points higher on mathematics, and 68 points higher on writing sections than students who had no prior coursework in the arts (2016). The correlation between music participation and increased scores on standardized assessments highlights improved AcaAchieve.

Personality Differences, Academic Achievement, and Music Programs

Although a strong correlation between music participation and AcaAchieve has been established, this correlation could vary among different music programs. This is because different personality traits tend to be prevalent amongst different courses. In a study analyzing the different personality traits that were prevalent among different music programs, Christian Reardon MacLellan (2011), concluded that the eight personality types used in the Myers-Briggs Type Indicator differed amongst students who participated in band, orchestra, and choir. For instance, MacLellan (2011) observed that choir students were 71% more likely to be extraverts, than compared to band students at 54% and orchestra students at 46%, who were more likely to be introverts.

This difference in personality has been proven by multiple researchers to influence AcaAchieve. For example, in a study observing the influence of personality traits on AcaAchieve, Florina Nechita and her colleagues (2015) concluded that personality traits proved to be a factor of AcaAchieve. Extraversion proved to correlate negatively with AcaAchieve since people with this trait are distracted, more talkative, and more motivated by group dynamics over individual study (Nechita et al., 2015). On the contrary, introverts obtained higher grades due to their silent, withdrawn nature (Nechita et al., 2015). Likewise, in a study using American College Test scores to compare the association

between AcaAchieve and personality traits in gifted students, Sakhavat Mammadov and his colleagues (2021) determined that personality traits proved to influence AcaAchieve through autonomous motivation. They explained that extraversion tends to be negatively related to AcaAchieve because these students may feel discomfort in academic environments like examinations and are more inclined to want to spend their time socializing (Mammadov, 2021). Since different personality types tend to be prevalent amongst different music courses, the relationship between music participation and AcaAchieve could vary between music programs.

Gap in the Research

The pre-existing research investigates the relationship between music course participation and positive benefits towards AcaAchieve (e.g., Eisner, 1998; Southgate & Roscigno, 2009; Cabanac, 2013). However, the pre-existing research does not focus on specific music courses and instead focuses on general music participation. For instance, when Southgate and Roscigno (2009) studied the impact of music on adolescent achievement, participants were selected from all general music courses. This same selection was also used by Morrison (1994), Janurik and Józsa (2022), and various other research studies. The gap in this research is characterized as a “Knowledge Gap” because this type of gap pertains to research in which the findings have not been discovered and research does not yet exist on the correlations of specific music courses and student success (Miles, 2017, p. 5). It is necessary to explore the impact of different music courses and AcaAchieve to further understand the relationship between music and AcaAchieve. Researching the relationship between different music programs and AcaAchieve could also reveal how much influence music programs have on a child’s personality since different personality types tend to thrive best in academic environments. To analyze the possible differences amongst different music courses and AcaAchieve, the guiding research question is: To what extent does the type of music program provided by Hillsborough County Schools correlate with AcaAchieve of high school juniors?

Hypothesis

Based on the pre-existing research about the relationship between AcaAchieve and music participation, and studies regarding the effects of personality on student success, I hypothesized that students who participated in choir would have lower AcaAchieve than those who participated in orchestra or band. This is because choir students displayed higher levels of extraversion, which was proven to hinder AcaAchieve. The current study plans to test this hypothesis by comparing levels of AcaAchieve amongst band, orchestra, and chorus students, which allows for a more specific correlational analysis to be implemented.

Research Design and Methodology

Study Design

The current study analyzes the AcaAchieve of students in different music programs. The goal of this study is to determine whether a relationship exists between distinct music courses and AcaAchieve. This is necessary to establish whether various music styles can interact uniquely with the brain by influencing focus or mood, and to further understand the relationship between music and AcaAchieve.

A two-part, dual-methods study was conducted. This triangulated approach allowed for a deep analysis of student AcaAchieve. This is important because there are several factors that contribute to student AcaAchieve such as GPA and test scores, but only investigating one of these components would not be sufficient to measure a student’s AcaAchieve (Shaunessy-Dedrick, 2015). For instance, a single-method design such as a survey would not have been favorable for this study because it could not have measured as many factors. The dual-methods design allowed for the

observation of multiple factors contributing to AcaAchieve. The two methods used to gather data in this study included an ex-post facto research design utilizing a shortened achievement test, and a content analysis of student transcript summaries (Figure 1). Using this design was crucial because the achievement test will provide for a current observation of students' success, and the student transcript surveys demonstrated the students' long-term success. Several researchers have measured student AcaAchieve through high school GPA, semester grades, or standardized achievement test scores (e.g., Janurik, 2022; Morrison, 1994; Eitle, 2002; Kuncel, 2007; Cabanac, 2013; Nechita et al., 2015). For example, when Cabanac investigated whether music performance enhances academic performance, achievement was analyzed by observing the student's grade marks. The pre-existing research displays these measures as credible contributing factors of AcaAchieve. The two-part, dual-methods design is necessary as it provides for a thorough analysis of student AcaAchieve.

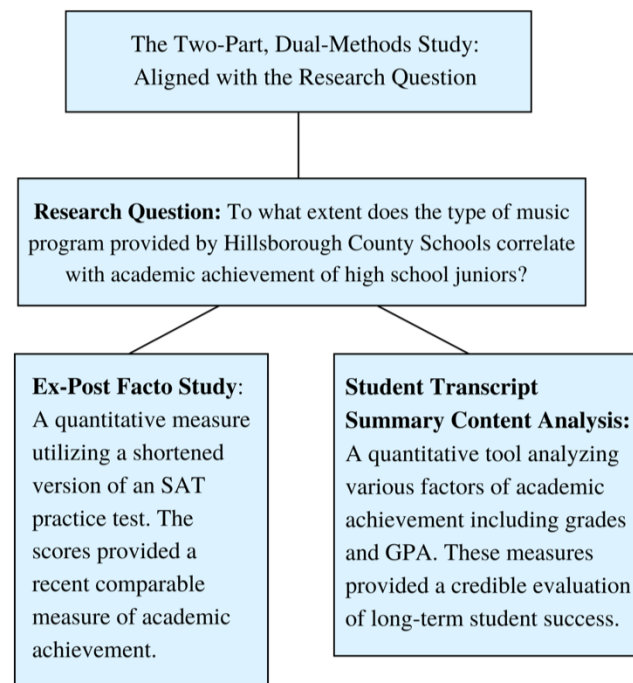


Figure 1: *The Two-Part, Dual-Methods Study: Aligned with the Research Question*

Subjects

The subjects present in this study were high school juniors who participated in band, orchestra, and choir. This demographic was chosen because all juniors in these music programs were enrolled in level three music courses. This was necessary because it has been proven that additional coursework in the arts can further benefit AcaAchieve over time (Janurik, 2022). Additionally, all high school juniors have prior experience taking AcaAchieve tests such as the National Merit Scholarship Qualifying Test distributed by the College Board. This will help to ensure that the test taking experience present in this study is familiar and a more accurate measure of student achievement. Throughout this study, the words “subjects” and “students” are used interchangeably. Prospective subjects were gathered by contacting music directors at a public high school in Hillsborough County, where all three music programs were present. Since

different high schools offer various amounts of AP and honors level classes, it was vital to ensure all students attended the same school to properly compare GPA and rigor of schedule.

Research Instruments

Achievement Test

The achievement test utilized in this study was adapted from the “SAT Practice Test 1” provided by the College Board. It was necessary to use practice tests in this study instead of an official SAT because the College Board does not allow for the replication and distribution of past test taking materials. The College Board (2019) states that SAT practice tests have been used in previous SAT administrations and have been verified to be an authentic measure of what students are projected to score on the SAT. The SAT practice test accurately demonstrates AcaAchieve because standardized tests such as the SAT have been established as valid measures of overall student performance (Kuncel, 2007).

Permission to use this test was stated in the “Copyright and Trademark Permission Request Instructions” provided by the College Board (Appendix A). To utilize this document, a shortened version was adapted to abide by time constraints (Appendix B). To do this, questions were randomly selected and removed from the original practice test. The questions and passages included in the shortened test were not altered in any way, and pages were copied so that they were reproduced exactly as they originally appeared. This test was approved and reviewed by the Institutional Review Board [IRB].

The SAT practice test consists of three sections: Reading, Writing and Language, and Math. Unlike the SAT practice test, which includes 154 questions that consist of multiple-choice and student-produced responses, the shortened version of the SAT Practice Test [SVSPT] only contained 51 multiple-choice questions. By shortening the number of questions in the SVSPT, the test could be taken in under 45 minutes and offered the subjects a more efficient testing experience. Additionally, unlike the SAT practice test, the SVSPT was scored based on the number of correct responses. This is because a norm-based sample was not available for this test and standard scores could not be determined.

The SVSPT provided a current quantitative measure of the students' AcaAchieve. Since the original SAT practice test serves as a tool for assessing how students will score on the SAT, the SVSPT was essential for analyzing student performance.

Student Transcript Summaries

The Student Transcript Summaries [STS] analyzed in this study provided an additional quantitative measure of student AcaAchieve. As stated by the National Center for Education Statistics, transcripts offer an “official and fixed record regarding student course taking behavior” and they are more accurate than student self-reported information (n.d.). Some AcaAchieve determinants displayed in STS include GPA, student semester grades, and scores on Florida standardized assessments such as the Algebra 1 End-of-Course Exam. During this study, students' weighted GPA, unweighted GPA, and the number of AP courses taken during 9th and 10th grade were extracted from the STS.

GPA and the number of AP courses taken were chosen to be analyzed for several reasons. For instance, the National Center for Education Statistics regards GPA as a common and accurate measure of student AcaAchieve (National Center for Education Statistics, 2011). This is because GPA represents the average number of grade points a student has earned in their high school courses (National Center for Education Statistics, 2011). Moreover, student grades and GPA have been used in several pre-existing studies as a comparable measure of student success (e.g., Janurik, 2022; Morrison, 1994; Eitle, 2002). Furthermore, regarding AP coursework, the College Board states, “The AP Program offers college-level courses and exams that you can take in high school” (n.d.). By taking an AP class, students are provided with challenging coursework, which increases their rigor of schedule.

The purpose of using the STS was to provide a reliable report of the students' previous academic history. Since it has been proven that GPA is an accurate measure of academic history and AP courses display a students' rigor of coursework, using the STS helped accurately provide information on a students' AcaAchieve.

Procedures

Multiple measures were implemented to ensure the comfort and confidentiality of the subjects. All subjects were assured anonymity for their test scores and STS throughout the study. To keep names classified during analysis, students were provided with a randomized code, created before the study, to apply to their test and STS. These codes were created by using the letter B for band, O for orchestra, or C for choir to correspond the student with their appropriate music course, followed by a combination of randomly selected numbers and letters. For instance, one of the codes used was "B8532K" to suggest the student participated in a band course. Subjects received codes upon entering the testing room. The study design and procedures were approved by the IRB to avoid ethical issues.

Subjects were recruited by contacting the music course directors at one public high school in Hillsborough County. Music directors were sent an email regarding the study and a flier to recruit potential subjects. Since all subjects were minors, upon agreement to participate in the study subjects were sent an assent form (Appendix C) and a parental consent form (Appendix D) to provide formal permission to participate. After completing the required forms, subjects were informed of their testing location and were asked to prepare a copy of their STS, which they could obtain from their high school.

Ex-Post Facto Study

The first part of this study was an experiment utilizing the SVSPT. 19 subjects completed the SVSPT and were tested at their high school under adult supervision. Before starting the test, students applied their corresponding codes to their booklet and STS. This helped to ensure confidentiality throughout the procedures and match scores to corresponding music courses. Subjects that participated in more than one music program received multiple codes. All subjects were read the same instructions before beginning the test and were given one hour to complete all the questions. Subjects could use a calculator during the entire administration. Upon completion, tests were scored and sorted by music program to observe any correlations or trends.

Content Analysis

The students' STS were collected upon completion of the SVSPT. Students placed the same code that they applied to their SVSPT on their STS. Before analyzing the STS, they were checked to ensure that the student was enrolled in a level three music course. Weighted GPA, unweighted GPA, and the number of previous AP classes were extracted from the STS. This provided information on the students' rigor of schedule and their previous academic performance. Data from the STS was then sorted into groups based on the different music courses to be analyzed for any trends or relationships.

Delimitations

Delimitations were established ahead of time to narrow the subject pool and scope of the current study. First, individuals that participated in music programs other than band, orchestra, and choir were excluded. Second, music participation was not considered if it was not part of an official music course outlined in the Hillsborough County Public Schools 6-12 Curriculum Guide. Third, only music directors at one high school located in Hillsborough County were

contacted for potential subjects. Fourth, this study only measured student AcaAchieve through test scores and information on STS.

Limitations

Before addressing results, it is necessary to acknowledge the limitations of the current study design. To begin, the SVSPT administered to the subjects in this study was shortened due to time constraints. This means the test's reliability may have been affected as questions were removed. There was no way to evaluate the test's true credibility after the changes took place. Although, the content in the test was preserved as best as possible.

Also, due to the specific scope and nature of this study, only a small number of subjects were analyzed. If a larger number of subjects had been present in this study, this would have allowed the results to be more conclusive. Furthermore, all students have different academic abilities regardless of the music program they participate in. This could have had additional effects on the students' test performance and GPA. Having more subjects could have helped ensure that more of these academic abilities were represented.

Additionally, this study only took place at one high school. Since music programs vary in different schools, this study can only be a true representation for a small population.

Results and Analysis

Results

The SVSPT was completed by 19 subjects. Of the subjects that completed the SVSPT, seven participated in orchestra, six participated in band, and six participated in choir. Groups were identified based on the corresponding code placed on their testing booklet. Following the administration of the SVSPT, scores were calculated based on the number of correct responses out of the total possible (36) and converted to a percentage.

After administering the SVSPT, 14 of the 19 subjects turned in a copy of their STS. Students placed the same code that they applied to their SVSPT on their STS. Five subjects decided not to turn in a copy of their STS because they felt uncomfortable sharing their academic records. Following the collection of the STS, the records were analyzed for the students' weighted GPA, unweighted GPA, and the number of previous AP classes taken. The values were then sorted into groups based on the student's music program.

Analysis

ANOVA Test

A one-way ANOVA test was performed to compare the effect that different music programs had on AcaAchieve through test scores, weighted GPA, unweighted GPA, and the number of AP classes taken. I chose the ANOVA test because the data would not need to be altered to be analyzed. For instance, if the Chi-Square test were used, the data would need to be sorted into categories. While the test scores could have been sorted into pass or fail categories, there was no way to determine the number of questions a student would need to get right to "pass" the SVSPT. Additionally, because the ANOVA test determines the level of variance between groups, it would help to determine whether a relationship is present. If the level of variance found was not statistically significant, it would prove a relationship did not exist.

Different Music Programs and SVSPT Scores

To begin, I performed a one-way ANOVA test to compare the effect that different music programs had on SVSPT scores. The one-way ANOVA test revealed that there was not a statistically significant variation between the three groups and SVSPT scores ($p= 0.53939$). Because the p -value was above 0.05, no post-hoc tests were needed to further analyze the variance.

Although the influence of different music programs on the SVSPT scores was not statistically significant, I observed several minor trends in the data. As shown in Figure 2, it was found that orchestra students performed the highest on the SVSPT while students who participated in chorus scored the lowest. This observation was consistent with the initial hypothesis that students who participated in chorus would score the lowest. Additionally, the mean of the band group fell in between orchestra and chorus. This could be explained by them being in between the introverted and extroverted levels of the other groups. Though the findings were not statistically significant, several minor trends were noted.

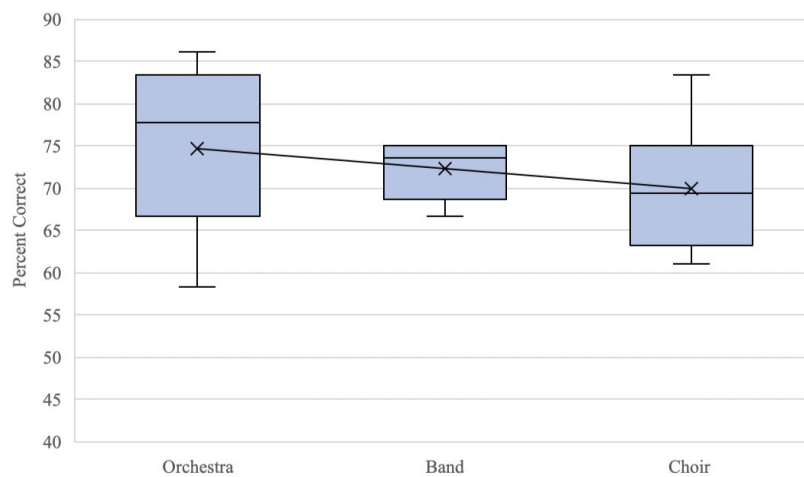


Figure 2: *The Relationship between Different Music Programs and SVSPT Scores*

Different Music Programs and Weighted GPA

After comparing the variance in SVSPT scores, I performed a one-way ANOVA to compare the effect that different music programs had on weighted GPA. The one-way ANOVA test revealed that there was not a statistically significant variation between the three groups and weighted GPA ($p= 0.43204$).

Like the SVSPT scores, several minor trends can also be observed comparing the effect that different music programs had on weighted GPA. For example, it is necessary to note that students who participated in chorus had the largest range for weighted GPA, while those who participated in band had the smallest range (see Figure 3). Also, the range of the orchestra group fell between the band and chorus group. Further research will need to be done to identify whether this trend was significant or a result of an unproven relationship. Furthermore, the band group displayed the highest mean weighted GPA. This was unlike the SVSPT scores since the orchestra group exhibited the highest mean score.

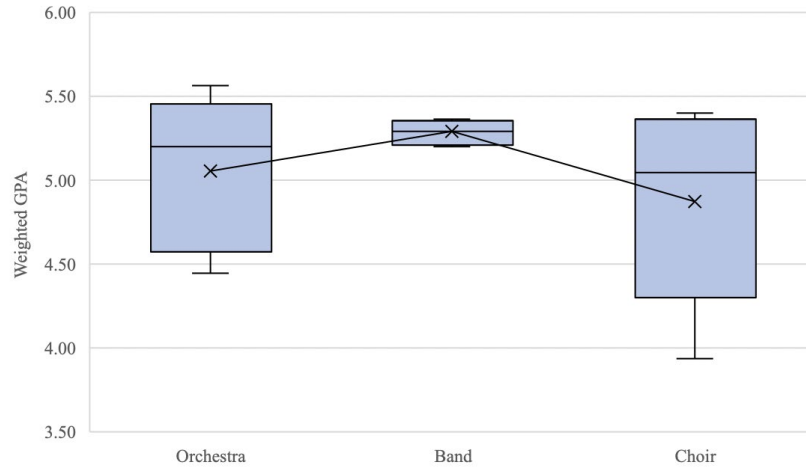


Figure 3: *The Relationship between Different Music Programs and Weighted GPA*

Different Music Programs and Unweighted GPA

Following the analysis of weighted GPA, I performed a one-way ANOVA test to compare the effect that different music programs had on unweighted GPA. The one-way ANOVA test revealed that there was not a statistically significant variation between the three groups and unweighted GPA ($p=0.61456$), meaning no post-hoc tests were necessary. Like the effect that different music programs had on weighted GPA, I observed similar trends with unweighted GPA (see Figure 4). While the variance was not statistically significant, the difference in the ranges and means may have shown a minor influence. For example, the range for orchestra and choir was much wider than the band group. Additionally, it is necessary to note that the band group, like with weighted GPA, possessed the highest mean value.

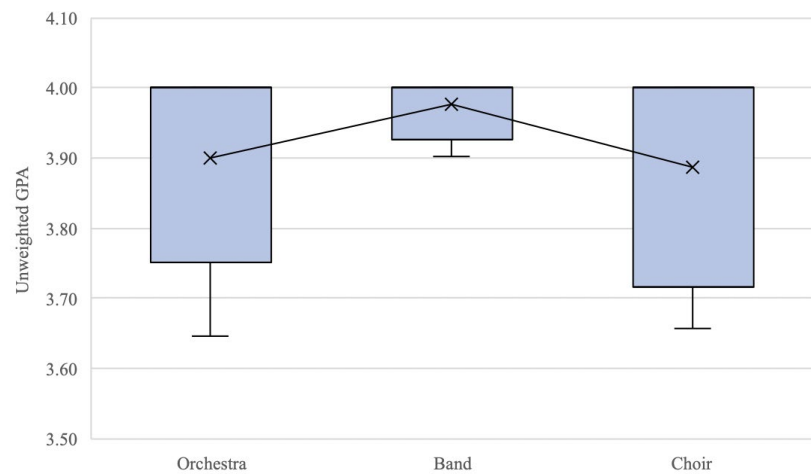


Figure 4: *The Relationship between Different Music Programs and Unweighted GPA*

Different Music Programs and the Number of AP Classes Taken

Lastly, I performed a one-way ANOVA test to compare the effect that different music programs had on the number of AP classes students had taken. The one-way ANOVA test revealed that there was not a statistically significant variation between the three groups and the number of AP classes students had taken ($p= 0.68699$). No post-hoc tests were needed to further analyze the variance because the data was not statistically significant.

Like the previous data sets, trends were observed even though the relationship proved to be statistically insignificant (see Figure 5). When analyzing the data, it was found that the range of AP classes taken was highest for orchestra and lowest for band. Just like with unweighted and weighted GPA, the band group displayed the lowest range. While the orchestra and chorus group both had a range of at least 3, the band group only had a range of 1. This signifies that students who participated in band may feel more inclined to take similar courses to their peers. Because of similar courses, they would have comparable class schedules and a similar GPA. While a causation cannot be found with minor similarities, more research should be done to investigate the relationship between similar classes and peer networks.

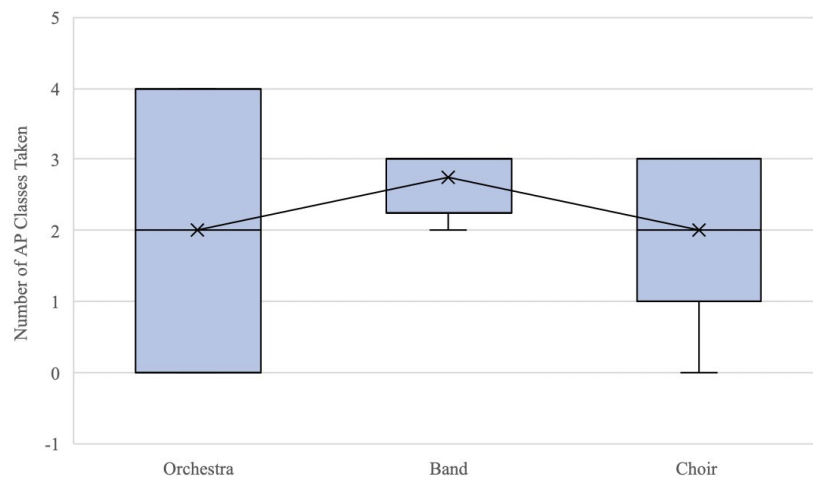


Figure 5: *The Relationship between Different Music Programs and the Number of AP Classes Taken*

Conclusion

The goal of this study was to analyze the relationship between AcaAchieve and different music programs. This is necessary to further understand the relationship between music and AcaAchieve and establish whether various music styles can interact uniquely with the brain.

Fulfillment of the Gap

The pre-existing research investigates the relationship between music course participation and positive benefits towards AcaAchieve (e.g., Eisner, 1998; Southgate & Roscigno, 2009; Cabanac, 2013). However, the pre-existing research did not focus on specific music courses and instead focused on general music participation. After investigating the influence of different music courses, this study found that they did not have a statistically significant effect on AcaAchieve, since the effect that different music programs had on achievement test scores, unweighted GPA, weighted GPA, and the number of AP classes students took were not statistically significant. While certain aspects of AcaAchieve were affected more than others, none of the effects were significant enough to show a major influence.

This notion fills a knowledge gap in the research by illustrating the way that music courses influence AcaAchieve without the type of music playing a significant role.

Implications

The results of this study can provide insight into the way music influences AcaAchieve. The data and findings in this study can benefit students, parents, and counselors by giving them information on how all music programs benefit AcaAchieve. Since all three music programs influenced AcaAchieve in an equivalent way, schools should endorse various music programs to allow students to enrich their curriculum. Providing students with options allows them to explore their interests and benefit their AcaAchieve. The findings can also be beneficial to scientists because this study provides insight into how music influences the brain. Since the music courses all influenced AcaAchieve in a comparable way, the courses must have had a common factor that influenced brain activity. This information can provide researchers with more data that could help them to understand this connection.

Limitations

As noted previously, there were several limitations to this study. For instance, since some students were not comfortable sharing their transcripts, there were fewer data points to analyze for GPA and the number of AP classes taken. Conducting this study with more subjects could have improved the reliability of these results. Furthermore, the data was only analyzed with quantitative data. By incorporating additional qualitative data such as interviews and surveys, this could have provided more information and allowed for a more in-depth review of how students feel influenced by different music courses.

Areas for Future Research

Replication of the Current Study

To replicate the current study, utilizing an official SAT practice test and acquiring more subjects would aid in further validating the findings of the study. Furthermore, analyzing more aspects of AcaAchieve such as benchmark tests and leadership could provide a deeper investigation of the influence of music programs on AcaAchieve. Finally, qualitative data should be incorporated into the study to provide a wider range of analysis. These adaptations would provide a deeper understanding of the current findings.

Different Directions

Further research with an expanded pool of subjects, with different age groups and geographical regions, would help validate the current study. Moreover, an in-depth analysis of the relationship between different music programs and conformity could provide more data on the influence of music programs on people. This is because the subjects in the band group tended to have much smaller ranges than choir and orchestra. By investigating this difference, it could be determined whether this trend was statistically significant or an influence of different music programs. This would help contribute to the growing research and literacy on the influence of participating in music programs.

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